MARSHALL STAR

Vol. 38 / Num. 14 | Marshall Space Flight Center | December 3, 1997

Columbia Mission's Harvest of Science Data Continues

While many Americans gave thanks during the Thanksgiving weekend, researchers aboard the Space Shuttle Columbia and in Marshall's Spacelab Mission Operations Control Center continued to reap a harvest of scientific knowledge from the fourth flight of the U.S. Microgravity Payload.

Shuttle Commander Kevin Kregel said Columbia's mission has proceeded smoothly aside from some initial trouble with the Spartan satellite. The Shuttle's primary payload, a suite of materials science and basic physics experiments, has chalked up solid results, he said.

"It's been highly successful for the United States Microgravity-4 payload and the experiments are really working well," Kregel said.

The final runs of the combustion science experiment known as Enclosed Laminar Flames added further to findings it has gathered about the stabilization of flames in varying air and fuel flows.

In an effort to further unravel the mysteries of how fuels burn, Columbia's crew "fired up" the Middeck Glovebox during the mission's lone combustion experiment. The research is aimed at providing greater insight, among other things, into why jet engines occasionally "flame out."

During the experiment, a fuel mixture of 50 percent methane and 50 percent nitrogen is ignited in an airflow to study flame stabilization in varying fuel flows and air velocities.

Principal Investigator Dr. Doru Stefanescu (seated in middle) and team members monitor the progress of the Pushing and Engulfment of Particles (PEP) experiment during one of the team's successful experiment runs in the Science Operations area at Space Laboratory Mission Operations Control. The PEP experiment is part of the Marshall-managed U.S. Microgravity-4 mission. ***Photo by Terry Leibold***

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Marshall Center Annual Holiday Receptions Planned for Dec. 17

The Marshall Center's annual Holiday Receptions are scheduled for Dec. 17 in the Cafeteria of Building 4610 from 9 to 10:30 a.m., and in the lobby of Building 4200 from 10:30 a.m. to noon. All Marshall Center employees, retirees and on-site contractors are invited to attend the reception of their choice. Dress is holiday casual.

The theme for this year, "Holiday Traditions," is intended to create a warm, close environment for the Marshall family, according to Holiday Reception Chairperson Tim Self.

"The atmosphere chosen for this year's holiday receptions will allow employees an opportunity to enjoy one another," said Self. "Complementing the comfortable holiday atmosphere will be seasonal music provided by Marshall's own Barbershop Quartet."

Shuttle services are not planned for the activity, added Self, but taxi services are available, as well as normal parking at both locations.

Reception for Littles Set for Dec. 15

Marshall employees, on-site contractors and retirees are invited to a farewell retirement reception honoring Center Director Dr. Wayne Littles on Dec. 15 from 3:30 to 5:30 p.m. in the cafeteria of Building 4203. The event is free. A community farewell celebration honoring Littles is planned for February.

Farewell for Smith Set for Dec.18

A retirement farewell reception for Marshall Center Associate Director Susan Smith will be on Dec. 18 from 3:30 p.m. to 5:30 p.m. in the cafeteria of Building 4203. Tickets are $7 and may be purchased from administrative officers or Janet Mick at 4-1920.

Lightning Imaging Sensor in Orbit Working as Expected

by Kelly McFalls

NASA's Lightning Imaging Sensor, an advanced, space-based instrument for monitoring lightning in a broad region around the globe, is in orbit and appears to be working as expected, its developers and members of the science team say.

The sensor was launched last Friday morning at 5:27 a.m. JST (3:27 p.m. CST on Nov. 27) on an H-II rocket from the Tanegashima Space Center in southern Japan, aboard the joint NASA and Japanese Space Agency's Tropical Rainfall Measuring Mission.

It was activated over the weekend, and — based on analysis of its initial data — is in good health, according to engineers and scientists at the Marshall Center and the Global Hydrology and Climate Center.

Activated one day earlier than planned, the lightning sensor began to fulfill its scientific goal to detect lightning strikes and severe storms, and locate lightning, over the tropical region of the globe — the zone 35 degrees above and 35 degrees below the equator.

Members of the Lightning Imaging Sensor (LIS) Development and science team look over initial data showing the first thunderstorm tracked by the LIS instrument which was activated Friday abord the Tropical Rainfall Measuring Mission. ***Photo by Dennis Olive***

The Lightning Imaging Sensor is a scientific payload aboard the Tropical Rainfall Measuring Mission — a project dedicated to studying the properties of tropical and subtropical rainfall.

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USMP-4 Experiments Yield Solid Results

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"We adjust the flow conditions and observing when the flame lifts from the burner and the conditions under which the flame is extinguished," said Principal Investigator Lea-Der Chen with the University of Iowa.

Additionally, information gathered from this study will be used to verify or correct computer modules which simulate the effect of air flow velocitlies on flame stabilization. Findings may lead to the design of more efficient power plant combustors and safer jet engines for military and civilian aircraft.

Science team members verified another auspicious discovery on Saturday while studying dendrites [tiny tree-like crystal structures that form in materials as they solidify]. The fastest growth rate ever measured for pivalic acid, a transparent material used by researchers to model metals, was recorded — a feat never before witnessed by scientists on the ground.

"When we initiated the experiment run Saturday, the pivalic acid sample crystallized at a rate of 875 micrometers per second," said the Lead Investigator Martin Glicksman of the Rensselaer Polytechnic Institute. "To do this, we had to establish a supercooling temperature of 2.25 degrees Fahrenheit — the largest level of supercooling ever obtained with this material in space or on Earth."

Glicksman said the pivalic acid provides a better solidification model of metals, such as aluminum and copper, than previously believed.

Knowledge gained from another materials investigation, the international cooperative experiment MEPHISTO, could help design advanced metallic alloys and electronic devices for the next century. The MEPHISTO furnace is being used to process samples of the metal bismuth , with small additions of tin, to map the evolution of the interface — or point where liquid meets solid — as the sample solidifies. Findings may lead to higher quality semiconductors for computer and other applications.

"Faster growth of crystals means increased production of computer chips, but too fast and the quality goes down," said Investigator Henry deGroh of NASA's Lewis Research Center. "So we want to know how fast we can grow crystals and maintain the quality, and determine how temperature influences the rate at which quality crystals can grow."

Meanwhile, there was good news Monday for Marshall Center's video guidance sensor (VGS) team. Mission managers decided to insert additional activities, including a second spacewalk and robotic arm deployment of Spartan into the timeline.

The revised plan will allow the VGS science team to gather more information about the video and laser-based sensors of its Automated Rendezvous and Capture system designed to allow NASA spacecraft to automatically link up in orbit.

"The crew will deploy the Spartan on the Remote Manipulator System and move it around the bay to gather the VGS data," said Project Manager Gene Beam.

Candidates Nominated for Upcoming Exchange Election

Center employees recently nominated four candidates by petition for one elective position on the Council of the Marshall Center's NASA Exchange .

The employee elected will serve with two other elected members of the Council and four members appointed by the Center Director. Both elected and appointed members will serve two-year terms.

The candidates are Larry Gagliano, Bennie Jacks, Willie Love and David Reynolds.

The Exchange Council is responsible for administering Exchange funds used for employee activities, such as dances, picnics, athletic events, recreation and other associated activities.

Larry Gagliano

Bennie Jacks

Willie Love

David Reynolds

All NASA employees are encouraged to vote. Ballots will be mailed to employees on the NASA Exchange information sheet, and the deadline for ballots to be received by the Exchange is Dec. 18.

Ballots are also available in the Exchange business office, Bldg. 4752.

Lightning Imaging Sensor

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Managed by Goddard Space Flight Center in Greenbelt, Md., the project is part NASA's Mission to Planet Earth enterprise, a long-term, coordinated research effort to study the total Earth system and the effects of natural and human-induced changes on the global environment.

Aboard the satellite, the lightning sensor is helping to pave the way for a future space-based lightning mapper that could deliver day and night lightning information to a forecaster's workstation within 30 seconds of occurrence — providing an invaluable tool for storm "nowcasting" and giving people more advance warning of severe storms.

"After the satellite was deployed, its check-out went so well, we went ahead and activated the lightning sensor on Friday," said the project manager, Roger Chassay of the Marshall Center. "All of the preliminary engineering data we've gotten so far have been outstanding."

"We got our first indication that the sensor was operating as expected mid-morning on Saturday, Nov. 29, when we received data that the sensor had detected a thunderstorm," said the experiment's principal investigator, Dr. Hugh Christian of the Marshall Center.

"The Lightning Imaging Sensor team is excited to have the sensor up and running, and is elated about the success of everything so far," said Chassay.

The sensor is expected to be in operation for three years, collecting data on the worldwide distribution of lightning. The data will be transmitted on a daily basis to a ground station in White Sands, N.M., then to Goddard Center. Goddard will transmit the data to the Global Hydrology and Climate Center in Huntsville for analysis.

Lockheed Martin Michoud Space Systems personnel successfully concluded hydrostatic proof testing fot the X-33 liquid oxygen tank in the Vertical Assembly Building at the Michoud Assembly Facility. The X-33 is a subscale technology demonstrator prototype of a Reusable Launch Vehicle, which Lockheed Martin hopes to develop early in the next century.

Christmas Dance Set for Dec. 6

The annual Marshall Center Christmas Dance will be held Dec. 6 in the Von Braun Center Exhibit Hall. Doors will open for the semi-formal event at 6 p.m., and there will be continuous music from 7 to 11 p.m. by two bands.

All seats will be reserved, and NASA employees, retirees, and on-site contractors can purchase tickets for $6 each; guest tickets are $8. Tickets are being sold at the Marshall Activity Building (4752) from 11:30 a.m. to 12:30 p.m. each weekday.

Employee Ads

Miscellaneous

★ Daiwa MF110 midsize golf clubs, 2-SW irons and putter, TRX70 graphite shafts, $280. 971-9710
★ Baby crib and mattress, cherry, $125. 232-1940
★ Bath bench for elderly $50; digital blood pressure cuff, new $30; corn popper, $15. 837-6776
★ 96 bales orchard grass and clover hay, $3 per bale. 423-2557
★ Solid wood hutch, $150. 830-8495
★ Gas logs, 24 in. for see-thru fireplace, vented, $50. 539-0094
★ Whirlpool washer, 4 years old, $150. 882-3326
★ Toy box, "Little Tikes", giant size, $45. 837-6109
★ Gary Fisher mountain bike, 97 model, marlin, black, bought in March, $300. 882-1771
★ Voit gravity rider exerciser, $60. 350-6477
★ Canon 76mm automatic zoom camera, $60; Pentax 90mm camera, $70; Sony 13" TV, $60. 772-9168
★ Four B. F. Goodrich Trail TA tires, LT30-9.5 x 15, $50 for all; Heywood Wakefield corner cabinet & twin bed. 350-7461
★ 357 Magnum Colt King Cobra, 6" w/Tasco Pro-point III, scope and accessories, $450. 828-5550
★ Lee Pro 1000 progressive loader and Lyman tumbler w/accessories, 828-5550
★ Ladies multi colored leather jacket, new, $100; gasoline pressure washer $125. 852-6952
★ Sanyo microwave oven, $50. 859-6837
★ 15" Phillips monitor, .28 dot pitch, 1024x768 resolution, digital controls, $150 o.b.o. 971-6885 weekdays after 5 p.m.
★ Golf clubs, Lynx Master irons, 2-8 and PW, new grips, $85. 350-7461
★ Nintendo 64 games: Wave Race, Turok, Cruisin'USA, $40 ea.; used Mortal Combat game for PC, $35. 880-3402 after 6 p.m.
★ Nintendo 64, two controllers, four games, $450 value for $350; Beanie Baby set, $1,500. 881-7000
★ Canon BJC-4100 Bubble Jet printer, newly refurbished, only ten pages printed. 880-0881

Vehicles

★ 1993 Ford Mustang, 4 cyl. LX, cruise control, PW, hatchback, 53K miles, $6,300. 534-6095
★ 1995 Buick Park Avenue Ultra, 69K miles, $19,500. 536-5100
★ 1985 Chevy C10, Silverado, long wheel base, rebuilt transmission, new brakes, 136K miles, $4,250. 232-9632
★ 1990 Honda Accord EX, 4-dr, 5-spd, sunroof, black, $7,950. 883-4770
★ 1990 Suzuki Sidekick JX, 4WD, A/C, AM/FM cassette, new tires, brakes, engine tune-up, $4,680. 837-6109
★ 1996 Chevy Corsica, 4-dr. , gray, ABS, $7,788. 852-7982
★ 1988 Ford Ranger p/u, 90K miles, 4-cyl., 5-spd, sport wheels stripes, $2,500 firm. 753-2278
★ 1994 Acura Integra LS, grey, 4-door, 65K miles, $9,800. 505-0129
★ 1985 Toyota Camry, 88K miles, automatic, A/C, AM/FM, $2,300. 539-7855
★ 1991 Toyota Previa Van, dual air, cruise, 144K miles, $5,900. 574-1650
★ 1994 Chev truck C1500, ext-cab, 5L, V8, cruise, tilt, EW&L, 75K miles, $14,000. 880-3765

Wanted

★ Autographed picture or item of Apollo 11 crew and Dr. Von Braun. 721-0764

Lost

★ Wire frame glasses in protective Serengeti, sunglass case in early Oct. 536-2288

Center Announcements

☛ ***Retirement Breakfast*** — Facilities Office Retirement Breakfast is scheduled for Dec. 9 at 8 a.m. at Shoney's located on University and the Parkway.

☛ ***1997-98 Hoops*** — The 1997-98 MSFC basketball season is underway. The league will be structured as it has been in the past with three divisions and will begin in late November and run through March. If you are interested in entering a team or joining a team, call Chris Calfee at 4-5788 or e-mail-chris.calfee@msfc.nasa.gov.

☛ ***Circus*** — The Ringling Bros., Barnum and Bailey Circus will be in Huntsville Dec. 3-7. All NASA employees, retirees and on-site contractors can take advantage of a $2.50 discount (per ticket) for performances scheduled Dec. 4 at 7:30 p.m. and Dec. 6 at 3 p.m. Ticket prices are $13.50 (reg. $16) or $7.50 (reg. $10), depending on seating choices. These prices are only available through the Exchange if a total of 25 or more tickets are purchased at one time. Seats will be assigned in blocks of 25 or more by the Von Braun Center. Early requests will receive priority. There are no further reductions for childrens' tickets. Contact the Exchange Office (bldg. 4752) with the name of employee, number of tickets, and full payment.

☛ ***Bookfair*** — The NASA Exchange is sponsoring the semiannual Bookfair, Dec. 2-4 in building 4200, room G-13 from 8 a.m. to 4 p.m. A variety of hardback books, including best sellers, cookbooks, gardening, biographies, sports, and children's selections will be offered at substantial discounts.

☛ ***Toastmasters International*** —The MSFC Information Systems Toastmasters Club will meet on Dec. 9 at 11:30 a.m. in the 4610 cafeteria conference room. For more information call Debbie Hagar at 961-4992 or Lee Johns at 544-5142

☛ ***EWS*** — An Emergency Warning System test has been scheduled for Dec. 4 at 3 p.m. This is an audio test only. DO NOT evacuate to protective areas. If severe weather is occurring at this time, the test will be rescheduled to a later date. Safety coordinators/monitors should send reports of malfunctioning speakers to AB11/Emergency Preparedness Officier, 544-5187.

☛ ***Stop Abuse*** — Aware of waste, fraud or abuse? Telephonically contact the MSFC Office of Inspector General at 544-9188 or send complaints to Mail Stop M-DI. Confidentiality will be maintained.

☛ ***FEHB*** — The Federal Employee Health Benefits open season extends from Nov. 11 thru Dec. 8. Comparison charts and brochures will be available through your administrative office.

☛ ***Personnel Office*** — The Personnel Office is hosting an Open House Dec. 9 from 1:30 to 3:30 p.m. in building 4200 on the 3rd floor. Refreshments will be served in conference room 329. All employees are invited.

☛ ***MSFC Internal Calls*** — This is a reminder to MSFC employees that the following telephone message system feature can be used: After dialing the 1-888-245-MSFC number to listen to messages, one can then dial -9- and -0- and make another internal (e.g. 4-xxxx) call.

Job Opportunities

CPP 98-7-SH, AST, Mission Operations Integrations, GS-801-14 (2 vacancies). S&E, Mission Operations Lab., Mission Planning Division & Operations Engineering Division. Closes Dec. 8.

MARSHALL STAR

Marshall Space Flight Center, Alabama 35812

The Marshall Star is Published every Wednesday by the Public Affairs Office at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Friday noon to the Marshall Public Affairs Office (CA10), Building 4200. Submissions should be written legibly and include the originator's name. The Marshall Star does not publish commercial advertising of any kind.

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Editorial Assistant – Betty Humphery
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U.S. Government Printing Office 1998-633-111- 60040

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NASA
Permit No. G-27